REMARKS

In response to the above-identified Office Action, Applicants have submitted formal drawings. Applicants note with appreciation the Office's indication that claims 64-66 and 79-81 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In view of the following remarks, Applicants hereby request further examination and reconsideration of the application, and allowance of claims 62-66 and 77-81.

The Office has rejected claims 62 and 77 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,386,317 to Corle et al ("Corle"), as being anticipated by U.S. Patent No. 5,521,705 to Oldenbourg et al ("Oldenbourg") and as being anticipated by U.S. Patent No. 6,128,127 to Kusaka ("Kusaka") and has rejected claims 62, 63, 77 and 78 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,060,808 to Koester ("Koester").

The Office asserts Corle discloses a microscope comprising a source 3, 53 for a homogeneously polarized input optical beam, a polarization converter 17, 17', 69 which produces an inhomogeneously polarized optical beam from the homogeneously polarized input optical beam and a microscopic imaging system 3, 83 which captures an image of a sample 21 using the inhomogeneously polarized optical beam.

The Office asserts that Oldenbourg discloses a microscope comprising a source (10, 10', 10") for a homogeneously polarized input optical beam, a polarization converter [(24, 26), (24', 26'), (24",26")] which produces an inhomogeneously polarized optical beam from the homogeneously polarized input optical beam and a microscopic imaging system (16, 16', 16") which captures an image of a sample (38, 38", 38") using the inhomogeneously polarized optical beam.

The Office also asserts that Kusaka discloses a microscope comprising a source (51) for a homogeneously polarized input optical beam, a polarization converter (54) which produces an inhomogeneously polarized optical beam from the homogeneously polarized input optical beam and a microscopic imaging system (110, 111) which captures an image of a sample (57) using the inhomogeneously polarized optical beam.

The Office asserts Koester discloses a microscope comprising a source (22) for a homogeneously polarized input optical beam, a polarization converter (54) including a first polarization beam splitter (3), a first phase shifter (32a), a second phase shifter (32b) and a second polarization beam splitter, wherein said polarization converter produces an inhomogeneously polarized optical beam from the homogeneously polarized input optical beam and a microscopic imaging system (the photocell) which captures an image of a sample (34a) using the inhomogeneously polarized optical beam.

Corle, Oldenbourg, Kusaka, and Koester, alone or in combination, do not suggest or disclose "a polarization converter which produces an inhomogeneously polarized optical beam from the homogeneously polarized input optical beam" as recited in claim 62 or "producing an inhomogeneously polarized optical beam from the input optical beam" as recited in claim 77. Applicants respectfully direct the Office's attention to FIG. 4, col. 4 lines 45-58 and col. 5, lines 3-16 of Corle which disclose two embodiments. The first embodiment of Corle discloses the quarter wave plate 17 converting linearly polarized radiation from polarizer 7 into elliptically polarized radiation. The second embodiment of Corle discloses the quarter wave plate 17 converting linearly polarized radiation from polarizer 7 into circularly polarized radiation. An inhomogeneously polarized beam has a state of polarization that varies over the cross-section of the beam at the pupil. Neither circularly polarized nor elliptically polarized radiation is inhomogeneously polarized because neither has a state of polarization that varies over the cross-section of the beam at the pupil.

Applicants also respectfully direct the Office's attention to col. 7, lines 59-64 of Oldenbourg which states "in all three disclosed embodiments, the light incident on and illuminating the samples 38, 38' and 38" will be circularly polarized when the variable retarders are at their initial settings, and will be elliptically polarized if a slightly different voltage is applied to the retarders." Neither circularly polarized nor elliptically polarized radiation is inhomogeneously polarized because neither has a state of polarization that varies over the cross-section of the beam at the pupil.

Applicants now direct the Office's attention to col. 8, lines 24-28 of Kusaka which states "The two linearly polarized light rays with mutually orthogonal vibrating directions transmitted through the object 66 under inspection by means of a lens group 67

comprising an objective lens and a lens group 68 comprising an imaging lens, these lens groups constituting the imaging optical system." Also at col. 14, lines 34-41, Kusaka discloses "The linearly polarized light ray is separated into two polarized light rays having mutually orthogonal vibrating directions, which are then made incident upon an object 57 under inspection by means of imaging lens 55 and objective lens 56." Linearly polarized light is not inhomogeneously polarized because it does not have a state of polarization that varies over the cross-section of the beam at the pupil.

Applicants respectfully direct the Office's attention to col. 5, lines 64-67 of Koester which describes a plane polarized beam 33a passing through slide 34 and object 34a. Plane polarized light is not inhomogeneously polarized because it does not have a state of polarization that varies over the cross-section of the beam at the pupil.

In contrast, the present invention discloses producing an inhomogeneously polarized optical beam from a homogeneously polarized input optical beam, e.g. on page 8, lines 1-2, page 10, lines 23-26 and page 15, lines 3-20 of the above-identified patent application. As discussed in the above-identified patent application, an inhomogeneously polarized beam can take the form of an azimuthally polarized or a radially polarized beam. An inhomogeneously polarized beam is advantageous because it provides a unique distribution of the electric field near the focus of an imaging system that can be used to advantage in surface and particle imaging and in electron manipulation. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejections of claims 62 and 77. Since claim 63 depends from and contains the limitations of claim 62, and claim 78 depends from and contains the limitations of claim 77, they are distinguishable over the cited references and are patentable in the same manner as claims 62 and 77.

The Office has objected to the drawings asserting that in FIG. 1 the polarized light beams outputted from the polarization beam splitter 34 are improperly illustrated. The Office asserts that the drawings are objected to because polarization beam splitters reflect one polarization component and transmit the other polarization component and that the polarization components from the mirror cannot be both reflected by the polarization beam splitter 34.

Applicants respectfully traverse the Office's objection. The polarized light beams output from the polarization beam splitter 34 shown in FIG. 1 in the above-identified patent application are properly illustrated. Brown Declaration ¶4. It is well known to those of ordinary skill in the art that beam splitters can selectively reflect a particular polarization direction, such as the vertically polarized direction, while transmitting the orthogonal or horizontally polarized direction. Brown Declaration ¶5. In the embodiment shown and described with reference to FIG. 1 in the above-identified patent application, the portions 24(1) and 24(2) of the beams are vertically polarized and thus are both reflected by beam splitter 34 to lens 37 while the portions 26(1) and 26(2) of the beams are horizontally polarized and thus are transmitted by beam splitter 34 to lens 37. Brown Declaration ¶6. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to withdraw its objection to the drawings.

In view of all of the foregoing, Applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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